

# Document made available under the Patent Cooperation Treaty (PCT)

International application number: PCT/US04/043266

International filing date: 21 December 2004 (21.12.2004)

Document type: Certified copy of priority document

Document details: Country/Office: US  
Number: 60/532,228  
Filing date: 23 December 2003 (23.12.2003)

Date of receipt at the International Bureau: 26 January 2005 (26.01.2005)

Remark: Priority document submitted or transmitted to the International Bureau in compliance with Rule 17.1(a) or (b)



World Intellectual Property Organization (WIPO) - Geneva, Switzerland  
Organisation Mondiale de la Propriété Intellectuelle (OMPI) - Genève, Suisse

1275859

# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

*January 19, 2005*

**THIS IS TO CERTIFY THAT ANNEXED HERETO IS A TRUE COPY FROM THE RECORDS OF THE UNITED STATES PATENT AND TRADEMARK OFFICE OF THOSE PAPERS OF THE BELOW IDENTIFIED PATENT APPLICATION THAT MET THE REQUIREMENTS TO BE GRANTED A FILING DATE.**

**APPLICATION NUMBER: 60/532,228**

**FILING DATE: *December 23, 2003***

**RELATED PCT APPLICATION NUMBER: *PCT/US04/43266***



Certified by

Under Secretary of Commerce  
for Intellectual Property  
and Director of the United States  
Patent and Trademark Office

122303

16085 U.S. PTO

PTO/SB/16 (08-03)

Approved for use through 07/31/2006. OMB 0651-0032

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

**PROVISIONAL APPLICATION FOR PATENT COVER SHEET**

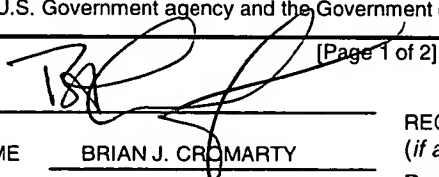
This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53 (c).

EL 995078930 US

331431 U.S. PTO  
60/532228

122303

INVENTOR(S)					
Given Name (first and middle [if any])	Family Name or Surname	Residence (City and either State or Foreign Country)			
MARK GILMORE	MEARS	ZIONSVILLE, INDIANA			
JANES DUANNE	TENBARGE	FISHERS, INDIANA			
<input checked="" type="checkbox"/> Additional inventors are being named on the <u>1</u> separately numbered sheets attached hereto					
TITLE OF THE INVENTION (500 characters max)					
Direct all correspondence to: <b>CORRESPONDENCE ADDRESS</b>					
<input type="checkbox"/> Customer Number <span style="border: 1px solid black; display: inline-block; width: 200px; height: 1.2em; vertical-align: middle;"></span>					
OR					
<input checked="" type="checkbox"/> Firm or Individual Name		JOSEPH S. TRIPOLI, THOMSON LICENSING INC.			
Address		PATENT OPERATIONS			
Address		P. O. BOX 5312			
City	PRINCETON	State	NJ	ZIP	08543-5312
Country	USA	Telephone	609 - 734-6834	Fax	609 - 734-6888
ENCLOSED APPLICATION PARTS (check all that apply)					
<input checked="" type="checkbox"/> Specification Number of Pages		3	<input type="checkbox"/> CD(s), Number _____		
<input checked="" type="checkbox"/> Drawing(s) Number of Sheets		1	<input type="checkbox"/> Other (specify) _____		
<input type="checkbox"/> Application Data Sheet. See 37 CFR 1.76					
METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT					
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27.					
<input type="checkbox"/> A check or money order is enclosed to cover the filing fees					
<input checked="" type="checkbox"/> The Director is hereby authorized to charge filing fees or credit any overpayment to Deposit Account Number: <u>07-0832</u>					FILING FEE AMOUNT (\$)
<input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached.					160
The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.					
<input type="checkbox"/> No.					
<input type="checkbox"/> Yes, the name of the U.S. Government agency and the Government contract number are: _____					

Respectfully submitted,  
SIGNATURE  
[Page 1 of 2]

Date

12/23/03

REGISTRATION NO.  
(if appropriate)

SEE ATTACHED

TYPED or PRINTED NAME

BRIAN J. CROMARTY

Docket Number:

PU030311

TELEPHONE 609 734 6804

**USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT**

This collection of information is required by 37 CFR 1.51. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 8 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop Provisional Application, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

**PROVISIONAL APPLICATION COVER SHEET**  
*Additional Page*

PTO/SB/16 (08-03)

Approved for use through 07/31/2006. OMB 0651-0032  
Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Docket Number    PU030311		
INVENTOR(S)/APPLICANT(S)		
Given Name (first and middle [if any])	Family or Surname	Residence (City and either State or Foreign Country)
BRET DAVID CHAD ANDREW	HAWKINS LEFEVRE	BROWNSBURG, INDIANA INDIANAPOLIS, INDIANA

[Page 2 of 2]

Number 1 of 1

**WARNING:** Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

### Method and Apparatus for Changing Channels in a System Operating in a PVR Mode

The invention describes a method and apparatus for incorporating an AVHDD (Audio Video Hard Disk Drive) with an IEEE-1394-capable HDTV to create a pseudo-PVR mode, and the rules for handling various aspect of the pseudo-PVR mode operation, including, channel changing and the variables of PID filtering, analog and digital channels, channel changes via direct entry, channel changes via CH+/-, temporary time-shift buffer flushes, changing major channels, changing minor channels (i.e., subchannels), etc.

It is highly desirable to be able to record a digital-TV broadcast because of its crisp and flawless picture, widescreen aspect ratio, and outstanding sound. However, recording digital-TV (ATSC, QAM) is not possible using a normal VCR since a normal VCR has a built-in analog-TV tuner, but not a built-in digital-TV tuner. An AVHDD (Audio Video Hard Disk Drive) is a solid-state digital recording device ideal for recording digital-TV broadcasts. Because of its capability to capture and effortlessly manipulate digital video (for example, to rewind/forward at different speeds, pause, jump from video location to video location), an AVHDD is also an ideal device for using as a PVR (Personal Video Recorder, i.e., a device that not only records favorite shows but continuously creates a time-shift buffer which can be manipulated at any time to pause TV, replay it, skip video, etc.).

The challenges in constructing an HDTV-with-AVHDD system into a PVR include:

- Since the HDTV does not have an MPEG encoder, the HDTV's 1394 output can output digital-TV programs but not analog-TV programs: How to handle channel changing to analog channels in PVR mode?
- A digital-TV channel can have multiple minor or "sub" channels: how to handle channel changes between minor and major channels?
- What should be done with the temporary time-shift buffer on channel changes, especially when PID filtering is enabled or disabled?

The inventors are unaware of other attempts to create a PVR system from an IEEE-1394-capable HDTV and an AVHDD, and teachings as to how channel changes would be handled if other such systems existed. In the previous generation of RCA HDTV (i.e., DM2CR, ATC311CR), the only way for the user to create a "PVR" mode was to start a "permanent" recording first by pressing RECORD button, then the user could manipulate the video from within that permanent recording. A temporary time-shift buffer was not part of DM2CR.

In the RCA ATC32x HDTV (which has a 1394 output, wherein an optional Audio Video Hard Disk Drive (AVHDD) may be attached via 1394), the HDTV records the currently-tuned digital-TV program onto the AVHDD so as to create a "continuous record time-shift buffer" like a Personal Video Recorder (PVR).

Pressing a “transport” key while tuned to a digital channel will enable PVR mode (as previously described) where the TV switches from its tuner to the AVHDD so that the user can use the trick-mode capabilities of the AVHDD like a PVR (e.g., PAUSE, slow motion, reverse, forward, instant replay, etc.). Pressing a “transport” key while tuned to an analog channel will not enable PVR mode since analog channels cannot be encoded to digital by the TV for recording to the AVHDD (however, if the TV had an MPEG encoder, then pressing a transport key would be allowed to initiate PVR mode for analog channels).

Certain inventive rules were created to handle various user actions and situations while in this pseudo-PVR mode of an HDTV-with-AVHDD which now follow:

What follows is an example of how channel tuning is handled in PVR mode: When watching Live TV of a digital-TV program, the TV is in continuous buffer mode (i.e., the tuner’s video is being sent via 1394 to the AVHDD which is continuously recording it) > user presses a transport key (e.g., REVERSE, FORWARD, PAUSE, etc) > TV switches to the default recording 1394 device (e.g., AVHDD) and begins PVR mode > user can do other transport commands in PVR mode > the CH+/- (Channel up, Channel down) buttons go through the subchannels on the current stream (i.e., on the current major channel) > at last subchannel of a given major channel, pressing CH+/- will go to next major channel while staying on that 1394 input > tuning to the next major channel will flush the temporary buffer.

When in PVR mode, CH+/- only tunes the next digital subchannel or the next digital major channel. Analog channels are not tuned (i.e., they’re skipped) when in PVR mode when the user presses CH+/- buttons.

Regardless of whether the TV is or is not applying PID filtering to the 1394 output stream, CH+/- will always tune to the next subchannel. (PID filtering is the act of stripping out the video, audio, and auxiliary information from subchannels other than the currently-tuned one.)

When in PVR mode and PID filtering is enabled, changing to the next major channel or to the next subchannel will flush (i.e., “erase”, “clear”) the temporary buffer.

When in PVR mode and PID filtering is NOT enabled, changing the minor channel does NOT flush the temporary buffer. This way, the user can flip back to that subchannel and still view that subchannels’ content.

If watching content from the TV tuner while in PVR mode and the user directly enters an analog channel number with the number keypad on the remote, then the TV

exits PVR mode (i.e., stops tuning to the default 1394 recording device) and displays the requested analog channel from the TV tuner.

If watching either TV tuner or 1394 device like cable box, TV is in PVR mode, and the user directly enters a digital channel number with the number keypad on the remote, then the TV stays in PVR mode and displays the requested digital channel from the TV's tuner (and buffers that new channel).

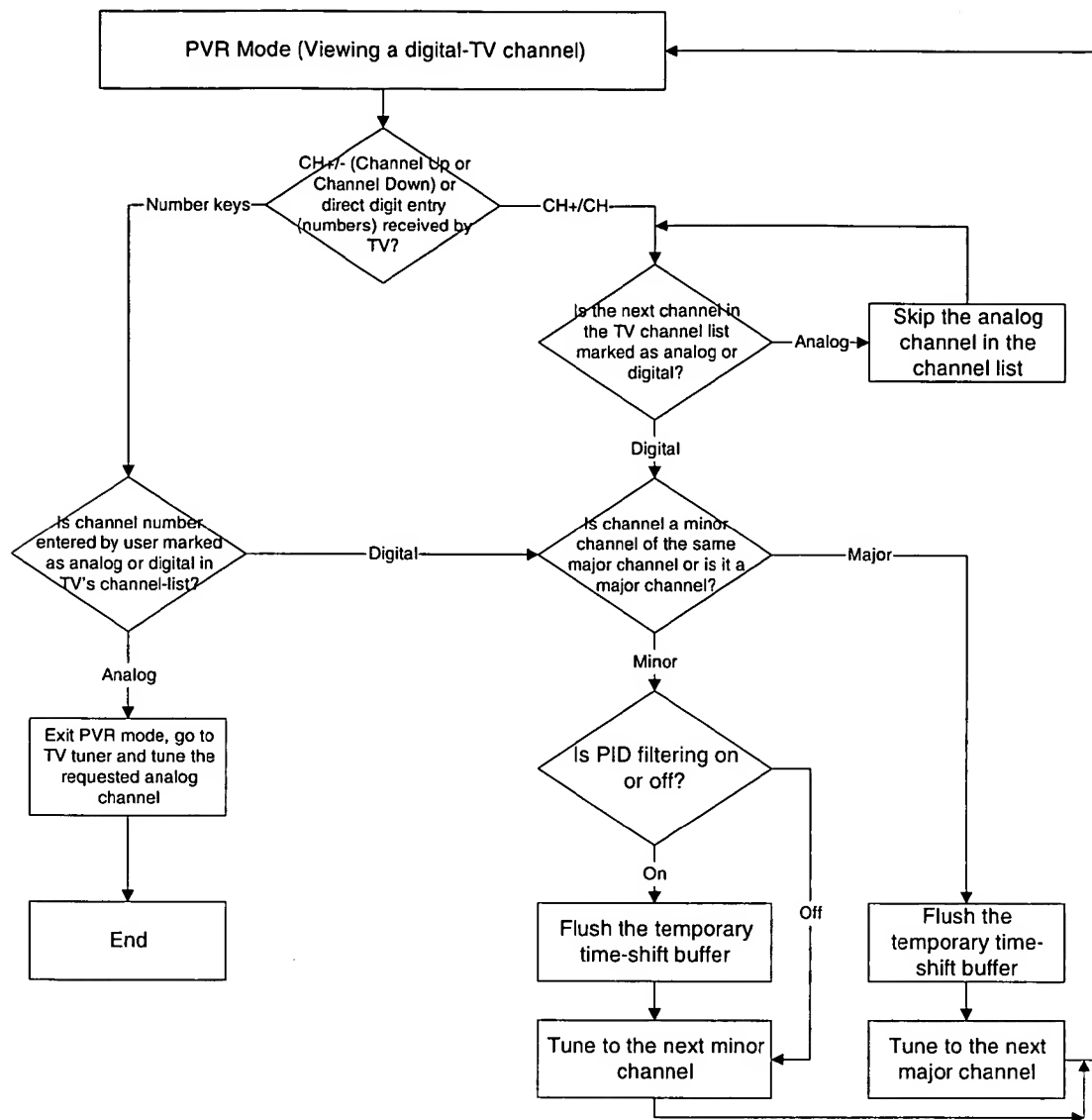


Figure 1: Digital Channel Change Method for PVR Mode




**BEFORE THE OFFICE OF ENROLLMENT AND DISCIPLINE  
UNITED STATE PATENT AND TRADEMARK OFFICE**

**LIMITED RECOGNITION UNDER 37 CFR § 10.9(b)**

Brian Jonathan Cromarty is hereby given limited recognition under 37 CFR § 10.9(b), as an employee of Thomson Licensing Inc., to prepare and prosecute patent applications wherein Thomson Licensing Inc. and its related organizations, i.e., the consolidated subsidiaries of Thomson SA, to wit: Thomson Licensing SA, Thomson Television Singapore, Thomson Videoglass, Thomson Broadcast Systems, Thomson multimedia Marketing France, Thomson multimedia SA, Thomson multimedia Inc, Thomson television Espana, Thomson audio Hong kong, Thomson television Angers, Thomson Television components France, Thomson Tubes and Displays SA, Thomson Polkolor, Societe tonneroise d'electronique indistrielle, European Audio products HK Ltd., Videocolor S.P.A., Deutsche Thomson-Brandt GmbH, and Singingfish.com Inc. are the assignees of record of the entire interest. This limited recognition shall expire on the date appearing below, or when whichever of the following events first occurs prior to the date appearing below: (i) Brian Jonathan Cromarty ceases to lawfully reside in the United States, (ii) Brian Jonathan Cromarty's employment with Thomson Licensing Inc., ceases or is terminated, or (iii) Brian Jonathan Cromarty ceases to remain or reside in the United States on an H-1B visa.

This document constitutes proof of such limited recognition. The original of this document is on file in the Office of Enrollment and Discipline of the U.S. Patent and Trademark Office.

**Expires: May 31, 2004**

  
\_\_\_\_\_  
Harry I. Moatz  
Director of Enrollment and Discipline